Introduction to the 4–6 Module of *Closing the Loop: Exploring Integrated Waste Management and Resource Conservation*

The lessons in *Closing the Loop: Exploring Integrated Waste Management and Resource Conservation* encourage students to be positive role models by examining their waste management habits and by voluntarily participating in projects that improve their school and community. The lessons in *Closing the Loop* (*CTL*) create a laboratory for learning. Students learn concepts and explore issues concerning natural resources and integrated waste management and apply the concepts in the classroom and in the world outside their school.

This unit was rated "number one" by a committee of teachers who evaluated nearly 100 curricular and activity guides for the 1999 edition of *Environmental Education Compendium for Integrated Waste Management and Used Oil*.

The 4–6 Module of the 2000 edition of *Closing the Loop* is composed of four units and an overview of each unit. A tab on the right-hand side of each right-facing page identifies the module and unit number. Units 1, 3, and 4 contains five lessons, and Unit 2 is made up of 12 lessons. The titles of the units are:

- Unit 1: Managing and Conserving Natural Resources
- Unit 2: Reducing, Reusing, and Recycling
- Unit 3: Composting
- Unit 4: Proper Management of Household Hazardous Waste

The overview of each unit contains the following components:

- The unit's concept(s)
- Each lesson's title, concept(s), and overview
- A book or a list of books required to implement each unit (and sometimes additional books recommended for the unit)
- Projects that students can do and examples of classes participating in specific projects

By using *CTL*, teachers will be following recommendations from California's newly adopted content standards and from curricular frameworks in a conceptual, interdisciplinary, and hands-on manner. If a teacher wishes to replace an activity described in *CTL* with another activity from another curricular guide, that can be done easily. However, it is important that the main concept of each lesson be preserved, or the lesson will no longer fulfill the intent of its original design.

The California State Board of Education's content standards from the following documents were used in the *CTL* lessons:

- *Science Content Standards, Grades K–12*, Prepublication Version, August 26, 1999
- *English–Language Arts Content Standards for California Public Schools, Kindergarten Through Grade Twelve*. Sacramento: California Department of Education, 1998
- *Mathematics Content Standards for California Public Schools, Kindergarten Through Grade Twelve*. Sacramento: California Department of Education, 1999

Note that only a prepublication version of the *Science Content Standards* was available at the time that this curriculum was written. However, all cited science content standards have been adopted by the California State Board of Education.

The following state frameworks are also cited in the *CTL* lessons:

- *Science Framework for California Public Schools, Kindergarten Through Grade Twelve*, 1990
- *History–Social Science Framework for California Public Schools, Kindergarten Through Grade Twelve*, 1988
- *The Visual and Performing Arts Framework for California Public Schools, Kindergarten Through Grade Twelve*, 1996

It is recommended that Unit 1 on natural resources be taught first, so students can get background information on natural resources and why they are essential to all living things. Also, in Unit 1 students explore the connection between integrated waste management and the conservation of natural resources, which sets the stage for understanding why the actions of reducing, reusing, and recycling materials are so important.

Ideally, the four units in the 4–6 Module of *CTL* should be taught in the order presented. Within the units the lessons should also be taught in the order presented. However, some teachers may prefer to select *CTL* lessons to incorporate in their curriculum; therefore, an attempt was made to make each lesson stand on its own (although sometimes connections to other lessons are suggested).

Each lesson provides step-by-step instructions on how to implement the activities in the lesson. More experienced teachers may choose not to follow this lengthier explanation of the activities. Instead, they can use the overview of each unit as an outline of what they will have their students do in each lesson. They might wish to develop their own activities with the lesson's concepts in mind. As needed, they can review the instructions specified in the lessons and use parts of these instructions when developing their own instructional strategies.

Throughout the *CTL* curriculum, the author has recommended that reused materials be used in the lessons. It is also important for teachers to model reducing, reusing, and recycling classroom materials, including buying products made from recycled materials. As one of the teachers who field-tested the *CTL* curriculum said:

> *I feel that we, as teachers, are role models for students. They see me reusing materials and recycling every day and "copy" what I model. I want my students to see the difference one class can make at our school. Too many times people think that one person, or one paper or can, cannot make an impact. I show that it does. Students model at home what I teach in class. Parents see the students and (hopefully) model them.*
>
> —Barbara Love, fourth-grade teacher and field tester for *Closing the Loop*, Fletcher Hills Elementary School, La Mesa-Spring Valley School District

In most lessons, when teachers develop a list with their students, they have the option of writing the list on a chalkboard or on butcher paper. Using the chalkboard conserves paper. However, if a list needs to be kept and used again in future lessons, the butcher paper provides a more permanent alternative and eliminates the possibility that the contents will be erased. It is recommended that both sides of the butcher paper be used for writing, and then the paper can be used in art projects, composted (or vermicomposted), or recycled.

In this curriculum students have opportunities to engage in many different types of projects. For example, students conduct research by gathering information from books and the internet on different natural resources, or they may gather information from a speaker about their local landfill. Some projects are relatively simple, such as reusing or recycling paper in the classroom or designing a game made out of discarded materials. Others are much more involved, such as planting shrubs and trees on the school grounds or participating in a coastal cleanup of litter. And still others will take large amounts of time and dedication, such as designing a campaign to reduce waste on a school-wide basis; organizing a school-wide recycling program; composting cafeteria food waste; or designing a newsletter to let community members know about the importance of and guidelines for reducing, reusing, and recycling various materials.

Examples of projects and classes participating in some of the projects are listed in the "Overview" for each unit. For more information on project-based learning, see "Tips for Implementing Projects." Also, the Autodesk Foundation provides information for educators interested in project-based learning. The Foundation's Web site is www.autodesk.com/foundation.

Fifth-grade teachers are encouraged to participate in the Jiminy Cricket's Environmentality Challenge, a contest sponsored each year by the Walt Disney Company, Inc., and the State of California's Environmental Education Interagency Network. The winning class gets to go to Disneyland, where the students are honored. For more information visit the Web site at http://ceres.ca.gov/education/ceein or call the hotline at 1-800-290-0299.

Make public what your class is doing when implementing *Closing the Loop* and publicize some of its recommended projects. Have students design presentation panels, submit photographs and news articles to local newspapers, tape conversations with students about their projects, videotape brainstorming sessions, and show students' work during the school's open house.